

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 11 55 - General Instructions
- .2 Section 07 92 00 – Joint Sealants
- .3 Section 08 50 00 – Windows

1.2 REFERENCES

- .1 The Master Painters Institute (MPI)
  - .1 Maintenance Repainting Manual 2004, Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.
- .2 Environmental Protection Agency (EPA)
  - .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .4 South Coast Air Quality Management District (SCAQMD), California State
  - .1 SCAQMD Rule 1113-04, Architectural Coatings.

1.3 QUALITY ASSURANCE

- .1 Qualifications:
  - .1 Contractor: to have a minimum of five years proven satisfactory experience. Provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.
  - .2 Qualified journeypersons as defined by local jurisdiction to be engaged in repainting work.
  - .3 Apprentices: may be employed provided they work under the direct supervision of qualified journeyperson in accordance with applicable trade regulations.
- .2 Conform to latest MPI requirements for interior repainting work including cleaning, preparation and priming.
- .3 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners and solvents) shall be in accordance with the latest edition of the MPI Approved Product List and shall be from a single manufacturer for each system used.

- .4 Paint materials such as linseed oil, shellac, reducers and turpentine shall be the highest quality product of an approved manufacturer listed in MPI Maintenance Repainting Manual and shall be compatible with other coating materials as required.
- .5 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .6 Standard of Acceptance: when viewed using final lighting source surfaces shall indicate the following:
  - .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
  - .2 Final coat to exhibit uniformity of colour and sheen across full surface area.

#### 1.4 PERFORMANCE REQUIREMENTS

- .1 Environmental Performance Requirements:
  - .1 Provide paint products meeting MPI "Environmentally Friendly" E1 E2 E3 ratings based on VOC (EPA Method 24) content levels.
  - .2 Where indoor air quality (odour) is a problem, use only MPI listed materials having a minimum E2 E3 rating.

#### 1.5 SCHEDULING

- .1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule a minimum of 48 hours in advance of proposed operations.
- .2 Paint occupied facilities in accordance with approved schedule. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.
- .3 Obtain written authorization from Departmental Representative for changes in work schedule.
- .4 Schedule repainting operations to prevent disruption by other trades if applicable and by occupants in and about building.

#### 1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide product data and manufacturer's installation/application instructions for each paint and coating product to be used in accordance with the requirements of Section 01 33 00 - Submittal Procedures.

- .2 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Submit full range colour sample chips for review and selection. Indicate where colour availability is restricted.
  - .2 Submit WHMIS MSDS - Material Safety Data Sheets for paint and coating materials in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Closeout Submittals:
  - .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
    - .1 Submit records of products used. List products in relation to finish system and include following:
      - .1 Product name, type and use (i.e. materials and location).
      - .2 Manufacturer's product number.
      - .3 Colour code numbers.
      - .4 MPI Environmentally Friendly classification system rating.
      - .5 Manufacturer's Material Safety Data Sheets (MSDS).

#### 1.7 SUSTAINABLE REQUIREMENTS

- .1 Materials and products in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

#### 1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:
  - .1 Deliver and store materials in original containers, sealed, with labels intact.
  - .2 Labels to indicate:
    - .1 Manufacturer's name and address.
    - .2 Type of paint or coating.
    - .3 Compliance with applicable standard.
    - .4 Colour number in accordance with established colour schedule.
  - .3 Remove damaged, opened and rejected materials from site.
  - .4 Store and handle in accordance with manufacturer's recommendations.
  - .5 Store materials and equipment in secure, dry, well-ventilated area with temperature range between 7 degrees C to 30 degrees C. Store materials and supplies away from heat generating devices and sensitive products above minimum temperature as recommended by manufacturer.
  - .6 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Consultant.

- .7 Remove paint materials from storage in quantities required for same day use.
- .8 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .9 Fire Safety Requirements:
  - .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
  - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site daily.
  - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada.

.2 Waste Management and Disposal:

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
- .2 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .3 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:
  - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
  - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
  - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
  - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
  - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
  - .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .6 Where paint recycling is available, collect waste materials by type and provide for delivery to recycling or collection facility.

1.9 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Do not perform repainting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application and until paint has cured sufficiently.

.2 Ventilate enclosed spaces in accordance with Section 01 11 55. Where required, provide continuous ventilation for seven days after completion of application of paint.

.3 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements. Use of gas-fired appliances is not permitted.

.4 Do not perform painting work unless minimum lighting level of 323Lux is provided on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer, do not perform repainting work when:

.1 Ambient air and substrate temperatures are below 10 degrees C.

.2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.

.3 Relative humidity within area to be repainted is above 85%.

.2 Conduct moisture tests using properly calibrated electronic Moisture Meter.

.3 Do not perform repainting work when maximum moisture content of substrate exceeds:

.1. 15% for wood.

.2 12% for plaster and gypsum board.

.3 Surface and Environmental Conditions:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint when previous coat of paint is dry or adequately cured, unless otherwise pre-approved by specific coating manufacturer.

.4 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of the Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

- 1.10 MAINTENANCE
- .1 Extra Materials:
  - .2 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .3 Submit one - one litre can of each type and colour of finish coating. Identify type and colour in relation to established colour schedule and finish system.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Paint materials listed in latest edition of MPI Approved Product List (APL) are acceptable for use on this project.
  - .2 Where required by authorities having jurisdiction, paints and coatings to provide a fire resistant rating.
  - .3 Paint materials for repaint systems to be products of single manufacturer.
  - .4 Only qualified products with MPI "Environmentally Friendly" E1 E2 E3 rating are acceptable for use on this project.
  - .5 Use only MPI listed L rated materials.
  - .6 Paints, coatings, thinners, solvents, cleaners and other fluids used in repainting, to be as follows:
    - .1 Not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
    - .2 Be manufactured without compounds which contribute to ozone depletion in upper atmosphere.
    - .3 Be manufactured without compounds which contribute to smog in lower atmosphere.
    - .4 Be manufactured where matter generating 'Biochemical Oxygen Demand' (BOD) in undiluted production plant effluent discharged to natural watercourse or a sewage treatment facility lacking secondary treatment does not exceed 15 mg/L.
    - .5 Be manufactured where total suspended solids (TSS) content in undiluted production plant effluent discharged to natural watercourse or sewage treatment facility lacking secondary treatment does not exceed 15 mg/L.
  - .7 Paints and coatings must not be formulated or manufactured with formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

## 2.2 COLOURS

- .1 All repainting is to match the existing colour scheme.
- .2 No more than eight colours will be selected for entire project and no more than three colours will be selected in each area.
- .3 Selection of colours will be from manufacturers full range of colours.
- .4 Where specific products are available in restricted range of colours, selection will be based on limited range.
- .5 First coat in two coat (Premium) repaint system to be tinted slightly lighter colour than top coat to show visible difference between coats.

## 2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition not to exceed paint manufacturer's recommendations. Do not use kerosene or such organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

## 2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss defined as sheen rating of applied paint, in accordance with following MPI gloss / sheen standard values:

Gloss Level Category	Units @ 60 Degrees	Units @ 85 Degrees
G1 - matte finish	0 to 5	maximum 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	minimum 35
G5 - semi-gloss finish	35 to 70	

G6 - gloss finish 70 to 85  
 G7 - high gloss finish > 85

- .2 Gloss level ratings of repainted surfaces shall be as specified herein and to match existing.

## 2.5 INTERIOR PAINTING SYSTEMS

- .1 RIN 6.3 - Dressed Lumber: (Including Doors, Door and Window Frames, and Mouldings).
- .1 RIN 6.3A - Latex (Semi-Gloss, Gloss).
  - .2 RIN 6.3B - Alkyd (Semi-Gloss, Gloss).
  - .3 RIN 6.3C - Semi-transparent Stain (Low Contact/Traffic).
  - .4 RIN 6.3D - Semi-Transparent Stain/Alkyd Semi-Transparent Stain/Varnish insert gloss level.
  - .6 RIN 6.3F - Semi-Transparent Stain/Lacquer insert gloss level.
  - .7 RIN 6.3G - Pigmented Lacquer.
  - .8 RIN 6.3H - Clear Lacquer insert gloss level.
  - .9 RIN 6.3J - Clear Alkyd Varnish insert gloss level.
  - .10 RIN 6.3K - Clear Polyurethane Varnish insert gloss level.
  - .11 RIN 6.3L - 2 Component Epoxy.
  - .12 RIN 6.3M - Filled Stain Wax.
  - .13 RIN 6.3N - Oil Resin Sealer.
  - .14 RIN 6.3P - Multicolour.
  - .15 RIN 6.3Q - High Performance Acrylic insert gloss level.
  - .16 RIN 6.3R - Waterborne Acrylic, Clear insert gloss level.
- .2 RIN 9.2 - Plaster and Gypsum Board: (gypsum wallboard, drywall, and "sheet rock type material").
- .1 RIN 9.2A - Latex insert gloss level.
  - .2 RIN 9.2B - High Performance Acrylic insert gloss level.
  - .3 RIN 9.2C - Alkyd insert gloss level Finish.
  - .4 RIN 9.2D - 2 Component Epoxy (Tile Like) insert gloss level.
  - .5 RIN 9.2E - 2 Component Epoxy (Tile Like) insert gloss level.
  - .6 RIN 9.2F - Multicolour

## PART 3 - EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.



3.2 EXAMINATION

- .1 Interior repainting work: inspected by MPI Accredited Paint Inspection Agency (inspector) acceptable to specifying authority and local Painting Contractor's Association. Painting contractor to notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project repainting specification and Finish Schedule (as well as plans and elevation drawings).
- .2 Interior surfaces requiring repainting: inspected by both painting contractor and Paint Inspection Agency who will notify Departmental Representative in writing of defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.
- .3 Where an assessed degree of surface degradation of DSD-1 to DSD-3 before preparation of surfaces for repainting is revealed to be DSD-4 after preparation, repair or replacement of such unforeseen defects discovered are to be corrected, as mutually agreed, before repainting is started.
- .4 Where "special" repainting or recoating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer to provide as part of work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Consultant.

3.3 PREPARATION

- .1 Perform preparation and operations for interior painting in accordance with MPI Maintenance Repainting Manual requirements except where otherwise specified.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
- .3 Clean and prepare interior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - .1 Remove dust, dirt, and surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
  - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using stiff bristle brush to remove dirt, oil and surface contaminants.
  - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

- .4 Allow surfaces to drain completely and to dry thoroughly. Allow sufficient drying time and test surfaces using an electronic moisture meter before commencing work.
- .5 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.
- .6 Many water-based paints cannot be removed with water once dried. Minimize use of kerosene or such organic solvents to clean up water-based paints.

- .4 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements. Remove such contaminates from surfaces, pockets and corners to be repainted by brushing with clean brushes, blowing with clean dry compressed air, or brushing/vacuum cleaning as required.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
- .6 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.
- .7 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from distance up to 1000 mm.

### 3.4 EXISTING CONDITIONS

- .1 Prior to commencing work, examine site conditions and existing interior substrates to be repainted. Report in writing to Consultant damages, defects, or unsatisfactory or unfavorable conditions or surfaces that will adversely affect this work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, and report findings to Consultant. Maximum moisture content not to exceed specified limits.
- .3 Do not commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to Painting Subcontractor and Inspection Agency.
- .4 Degree of surface deterioration (DSD) to be assessed using MPI Identifiers and Assessment criteria indicated in MPI Maintenance Repainting Manual. MPI DSD ratings and descriptions are as follows:

Condition	Description
DSD-0	Sound Surface ( includes visual (aesthetic) defects that do not affect film's protective properties).
DSD-1	Slightly Deteriorated Surface (indicating fading; gloss reduction, slight surface contamination, minor pin holes scratches).
DSD-2	Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, and staining).
DSD-3	Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges).
DSD-4	<u>Substrate Damage (repair or replacement of surface required).</u>

### 3.5 PROTECTION

- .1 Protect existing surfaces and adjacent fixtures and furnishings from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Consultant.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .3 Protect factory finished products and equipment.
- .4 Protect general public and building occupants in and about building.
- .5 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and surface mounted equipment, fittings and fastenings prior to undertaking re-painting operations. Store items and re-install after painting is completed.
- .6 Move and cover furniture and portable equipment as necessary to carry out repainting operations. Replace as painting operations progress.
- .7 As repainting operations progress, place "WET PAINT" signs in occupied areas to approval of Consultant.

- 3.6 APPLICATION
- .1 Apply paint by method that is best suited for substrate being repainted using brush, roller, air sprayer and/or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise. Methods of application as pre-approved by Consultant before commencing work.
  
  - .2 Brush and Roller Application:
    - .1 Apply paint in uniform layer using brush and/or roller of types suitable for application.
    - .2 Work paint into cracks, crevices and corners.
    - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
    - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple unless approved by Consultant.
    - .5 Remove runs, sags and brush marks from finished work and repaint.
  
  - .3 Spray Application:
    - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
    - .2 Keep paint ingredients properly mixed in containers during paint application by continuous mechanical agitation intermittent agitation frequently as necessary.
    - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern.
    - .4 Back roll spray applications and brush out runs and sags immediately.
    - .5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.
  
  - .4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Consultant.
  
  - .5 Apply paint coats in continuous manner and allow surfaces to dry and properly cure between coats for minimum time period as recommended by manufacturer. Minimum dry film thickness of coats not less than that recommended by manufacturer. Repaint thin spots or bare areas before next coat of paint is applied.
  
  - .6 Sand and dust between coats to remove visible defects.
  
  - .7 Repaint surfaces both above and below sight lines as specified for surrounding surfaces, and projecting ledges.

3.8 FIELD QUALITY CONTROL .1 Inspection:  
 .2 Advise Departmental Representative and Paint Inspection Agency when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.  
 .3 Co-operate with Paint Inspection Agency and provide access to areas of work.

3.9 CLEANING .1 Proceed in accordance with Section 01 74 11 - Cleaning, supplemented as follows:  
 .1 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.  
 .2 Keep work area free from unnecessary accumulation of tools, equipment, surplus materials and debris.  
 .3 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.  
 .4 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as other cleaning and protective materials (e.g. rags, drop cloths, and masking papers), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction and as noted herein.  
 .5 Clean painting equipment in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations to be recycled or disposed of in manner acceptable to authorities having jurisdiction.  
 .6 Recycle paint and coatings in excess of repainting requirements as specified.

3.10 RESTORATION .1 Clean and re-install hardware items removed before undertaken painting operations.  
 .2 Remove protective coverings and warning signs as soon as practical after operations cease.  
 .3 Remove paint splashings on affected exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible solvent.  
 .4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.  
 .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION



.2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 33. - Health and Safety Requirements 01 47 15 - Sustainable Requirements - Construction.

.3 Samples:

- .1 Submit for review and acceptance of each unit.
- .2 Samples will be returned for inclusion into work.
- .3 Upon request, Departmental Representative will furnish qualified products list of paints.
- .4 Paints that do not appear on MPI Approved Products List must be approved by Departmental Representative before use on project. When it is proposed to use non-qualified paint, submit 1 2 L sample of paint to Departmental Representative at least 4 weeks prior to commencement of painting for analysis and acceptance. Mark samples with name of project, its location, paint manufacturer's name and address, name of paint, MPI standard number and manufacturers paint code number.
- .5 Enable Departmental Representative to take 1 or 2 L samples of each paint delivered to site, one sample from manufacturer's containers and one sample from painters' pot.

.4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.5 Test Reports:

- .1 Submit test reports showing compliance with specified performance characteristics and physical properties and in accordance with Section 01 45 00 - Quality Control.

1.5 QUALITY ASSURANCE

.1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Develop Construction Waste Management Plan Waste Reduction Workplan related to Work of this Section.

- .4      Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan Waste Reduction Workplan in accordance with Section 01 74 19 - Construction/Demolition Waste Management.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1      Paint:
  - .1      Sustainability Characteristics:
    - .1      VOC limit: 150 g/L maximum to CCD-047 CCD-048.
    - .2      Ensure paint does not contain chemical restrictions to CCD-047 and CCD-048.
  - .2      Primer: MPI EXT 5.1C, primer, marine for steel.
    - .1      Primer for second coat: tinted sufficiently off finish colour of first coat to show where second coat is applied.
    - .2      Tinting material: compatible with primer and not detrimental to its service life.
  - .3      Enamel: MPI EXT 5.1G, enamel, alkyd, marine, exterior; If majority of paint application is to be by brushing, use paint to MPI EXT 5.1. Colours will be selected by the Departmental Representative.
  - .4      Aluminum paint: to MPI EXT 5.4, paint, aluminum, marine.
  - .5      Sand for sandblasting: to SSPC (Steel Structures Painting Council).

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- .1      Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for painting exterior metal surfaces installation in accordance with manufacturer's written instructions.
  - .1      Visually inspect substrate in presence of Departmental Representative.

### 3.2 PREPARATION

- .1      Remove existing loose and rusted paint from exterior metal surfaces.
- .2      Metal surfaces to be repainted:
  - .1      Clean surfaces by removing loose, cracked, brittle or non-adherent paint, rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with following.



- .1 Commercial blast cleaning: to SSPC-SP 6.
  - .2 Brush-off blast cleaning: to SSPC-SP 7.
  - .3 Solvent cleaning: to SSPC-SP 1.
  - .4 Hand tool cleaning: to SSPC-SP 2.
  - .5 Power tool cleaning: to SSPC-SP 3.
- .2 Commercial blast clean rusted and bare metal surfaces where existing paint system has failed.
- .3 Brush-off blast clean remaining metal surfaces to be painted.
- .4 Scrape edges of old paint back to sound material where remaining paint is thick and sound, feather exposed edges.
- .3 Compressed air to be free of water and oil before reaching nozzle.
- .4 Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, by blowing with clean dry compressed air, or by vacuum cleaning.
- .5 Apply paint after prepared surfaces have been accepted by Departmental Representative.
- .6 Prior to starting paint application ensure degree of cleanliness of surfaces is to SSPC-Vis 1.
  - .1 Apply primer, paint, or pretreatment after surface has been cleaned and before deterioration of surface occurs.
  - .2 Clean surfaces again if rusting occurs after completion of surface preparation.
- .7 Mixing paint:
  - .1 Do not dilute or thin paint for brush application.
  - .2 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
  - .3 Do not mix or keep paint in suspension by means of air bubbling through paint.
  - .4 Thin paint for spraying according to manufacturer's written instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
- .8 Number of paint coats: 3.
  - .1 Repainting existing metal surfaces.
    - .1 One primer coat to minimum dry film thickness of 35 microns to bare and commercial sand blasted areas.
    - .2 Two Alkyd enamel Aluminum paint coats to minimum dry film thickness of 25 microns per coat.

3.3 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Apply paint by spraying, brushing, or combination of both. Use sheepskins or daubers when no other method is practical in places of difficult access.
- .3 Use dipping or roller coating method of application when specifically authorized by Department Representative in writing.
- .4 Caulk open seams at contact surfaces of built up members with material approved by Departmental Representative, before second undercoat of primer is applied.
- .5 Where surface to be painted is not under cover, do not apply paint when:
  - .1 Air temperature is below 5 degrees C or when temperature is expected to drop to 0 degrees C before paint has dried.
  - .2 Temperature of surface is over 50 degrees C unless paint is specifically formulated for application at high temperatures.
  - .3 Fog or mist occur at site; it is raining or snowing; there is danger of rain or snow; relative humidity is above 85%.
  - .4 Surface to be painted is wet, damp or frosted.
  - .5 Previous coat is not dry.
- .6 Supply cover when paint must be applied in damp or cold weather. Supply, shelter, or heat surface and surrounding air to comply with temperature and humidity conditions specified. Protect until paint is dry or until weather conditions are suitable.
- .7 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.
- .8 Apply each coat of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .9 Brush application:
  - .1 Work paint into cracks, crevices and corners and paint surfaces not accessible to brushes by spray, daubers or sheepskins.
  - .2 Brush out runs and sags.
  - .3 Remove runs, sags and brush marks from finished work and repaint.
- .10 Spray application:
  - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

- .2 Provide traps or separators to remove oil and water from compressed air and drain periodically during operations.
  - .3 Keep paint ingredients properly mixed in spray pots or containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
  - .4 Apply paint in uniform layer, with overlapping at edges of spray pattern.
  - .5 Brush out immediately runs and sags.
  - .6 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray. In areas not accessible to spray gun, use brushes, daubers or sheepskins.
  - .7 Remove runs, sags and brush marks from finished work and repaint.
- .11 Shop painting:
- .1 Do shop painting after fabrication and before damage to surface occurs from weather or other exposure.
  - .2 Spray paint contact surfaces of field assembled, bolted, friction type joints with primer coat only. Do not brush primer after spraying.
  - .3 Do not paint metal surfaces which are to be embedded in concrete.
  - .4 Paint metal surfaces to be in contact with wood with either full paint coats specified or three shop coats of specified primer.
  - .5 Do not paint metal within 50 mm of edge to be welded. Give unprotected steel one coat of boiled linseed oil or other approved primer protective coating after shop fabrication is completed.
  - .6 Remove weld spatter before painting. Remove weld slag and flux by methods as specified in paragraph 3.2.3 Metal Surfaces to be Repainted.
  - .7 Protect machine finished or similar surfaces that are not to be painted but that do require protection, with coating of rust inhibitive petroleum, molybdenum disulphide, or other coating approved by Departmental Representative.
  - .8 Copy previous erection marks and weight marks on areas that have been shop painted.
- .12 Field painting:
- .1 Touch up metal which has been shop coated with same type of paint and to same thickness as shop coat. This touch-up to include cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas.
  - .2 Field paint surfaces (other than joint contact surfaces) which are accessible before erection but which are not to be accessible after erection.
  - .3 Where painting does not meet with requirements of specifications, and when so directed by Departmental Representative remove defective paint, thoroughly clean affected surfaces and repaint in accordance with these specifications.

- .13 Handling painted metal:
  - .1 Handle painted metal after paint has dried, or when necessary for handling for painting or stacking for drying.
  - .2 Scrape off and touch up paint which is damaged in handling, with same number of coats and kinds of paint as were previously applied to metal.

### 3.4 FIELD QUALITY CONTROL

- .1 Site Tests, Inspections:
  - .1 Upon completion of the painting procedures test for dry film reading and evaluate the results as per SSPC-PA 2.

### 3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### 3.6 PROTECTION

- .1 Protect painted surfaces from damage during construction.
- .2 Protection of surfaces:
  - .1 Protect surfaces not to receive paint.
  - .2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats of paint. Remove contaminants from surface and apply paint immediately.
  - .3 Protect cleaned and freshly painted surfaces from dust to approval of Consultant.
- .3 Repair damage to adjacent materials caused by painting exterior metal surface application installation.

END OF SECTION